

Tennessee Revenue Forecast, 2005

Presented to
Tennessee State Funding Board

Prepared by
Dr. Richard Evans, Director of Forecasting
Sparks Bureau of Business and Economic Research/
Center for Manpower Studies
The University of Memphis

December 9, 2004

THE UNIVERSITY OF
MEMPHIS[®]

SPARKS BBER
Bureau of Business and Economic Research

As shown in Table 1, the most likely single value for total 2004-2005 Tennessee tax collections is \$9.451 billion, which represents 3.6 percent growth (as shown in Table 2). This forecast would be higher than the July 9, 2004, budget assumption of \$9.396 billion. However, the risk analysis shown in Table 3 indicates that there is an estimated 0.33 degree of risk that tax revenue will be at or below the budgeted level. The estimated most narrow high-low interval that has a 0.50 probability of containing the end-of-year value is \$9.537-\$9.366 billion in fiscal year 2004-2005. The forecast for the next fiscal year calls for 3.5 percent growth to \$9.782 billion.

**Table 1. Tax Collections and Forecasts for Tennessee,
August Through July, 2002-2006**

| Class of Tax | Actual | | Forecasts | |
|-----------------------------------|-----------------|-----------------|-----------------|-----------------|
| | 2002-2003 | 2003-2004 | 2004-2005 | 2005-2006 |
| Franchise and Excise | \$1,084,972,000 | \$1,181,889,000 | \$1,276,640,000 | \$1,362,688,000 |
| Income | 116,774,000 | 139,805,000 | 146,004,000 | 154,705,000 |
| Inheritance and Estate | 81,753,000 | 101,752,000 | 104,276,000 | 108,528,000 |
| Gasoline | 600,932,000 | 600,937,000 | 600,982,000 | 614,515,000 |
| Petroleum Special | 60,698,000 | 62,555,000 | 63,642,000 | 64,729,000 |
| Tobacco | 114,467,000 | 119,877,000 | 121,454,000 | 123,032,000 |
| Beer | 17,742,000 | 18,040,000 | 18,708,000 | 19,300,000 |
| Motor Vehicle Registration | 226,831,000 | 240,501,000 | 251,097,000 | 262,160,000 |
| Motor Vehicle Title | 10,978,000 | 11,284,000 | 11,665,000 | 12,059,000 |
| Mixed Drink | 38,484,000 | 40,842,000 | 42,783,000 | 44,725,000 |
| Business | 40,273,000 | 94,825,000 | 95,525,000 | 96,175,000 |
| Privilege* | 248,611,000 | 276,874,000 | 273,347,000 | 309,860,000 |
| Gross Receipts | 17,631,000 | 16,211,000 | 17,184,000 | 17,665,000 |
| TVA—In Lieu of Tax Payment | 198,638,000 | 202,395,000 | 214,932,000 | 220,950,000 |
| Alcoholic Beverage | 34,731,000 | 36,426,000 | 37,020,000 | 37,613,000 |
| Sales and Use | 5,455,184,000 | 5,806,503,000 | 5,998,160,000 | 6,152,412,000 |
| Motor Vehicle Fuel | 154,765,000 | 168,758,000 | 176,862,000 | 179,524,000 |
| Severance | 1,053,000 | 1,102,000 | 1,090,000 | 1,080,000 |
| Coin-Operated Amusement | 776,000 | 451,000 | 317,000 | 222,000 |
| Total | \$8,505,293,000 | \$9,121,027,000 | \$9,451,688,000 | \$9,781,942,000 |

*Forecast excludes earmarked funds.

**Table 2. Growth History and Forecast for Tennessee Tax Collections
1994-2006**

| Class of Tax | Avg. Annual | Actual | Forecasts | |
|------------------------------|-------------|-----------|-----------|-----------|
| | 1994-2004 | 2003-2004 | 2004-2005 | 2005-2006 |
| Franchise and Excise | 5.7% | 8.9% | 8.0% | 6.7% |
| Income | 3.4% | 19.7% | 4.4% | 6.0% |
| Inheritance and Estate | 8.5% | 24.5% | 2.5% | 4.1% |
| Gasoline | 1.4% | 0.0% | 0.0% | 2.3% |
| Petroleum Special | 1.3% | 3.1% | 1.7% | 1.7% |
| Tobacco | 4.1% | 4.7% | 1.3% | 1.3% |
| Beer | 2.6% | 1.7% | 3.7% | 3.2% |
| Motor Vehicle Registration | 3.8% | 6.0% | 4.4% | 4.4% |
| Motor Vehicle Title | 1.8% | 2.8% | 3.4% | 3.4% |
| Mixed Drink | 5.3% | 6.1% | 4.8% | 4.5% |
| Business | 22.6% | 135.5% | 0.7% | 0.7% |
| Privilege* | 8.2% | 11.4% | - 1.3% | 13.4% |
| Gross Receipts** | 2.8% | - 8.1% | 6.0% | 2.8% |
| TVA—In Lieu of Tax Payment** | 2.8% | 1.9% | 6.2% | 2.8% |
| Alcoholic Beverage | 3.0% | 4.9% | 1.6% | 1.6% |
| Sales and Use | 5.6% | 6.4% | 3.3% | 2.6% |
| Motor Vehicle Fuel | 4.3% | 9.0% | 4.8% | 1.5% |
| Severance | 1.9% | 4.7% | - 1.1% | - 1.0% |
| Coin-Operated Amusement | 26.2% | - 41.9% | -29.7% | -30.0% |
| Total | 5.2% | 7.2% | 3.6% | 3.5% |

*Forecast excludes earmarked funds.

**TVA Payments and Gross Receipts were reported together in 1995.

With three months of collections, the updated 2004-2005 forecast for Sales and Use Taxes calls for a shortfall. The most likely single figure is \$5.998 billion, which is bracketed by a \$6.076-\$5.923 billion high-low range. A risk analysis indicates that there is a high risk, 0.80, that end-of-year figures will be at or below the \$6.097 billion July budget assumption. For the sample dating back to 1969, the simple model that generates these Sales Tax forecasts has a mean absolute error of \$0.031 billion and a 1.45 percent mean absolute percentage error.

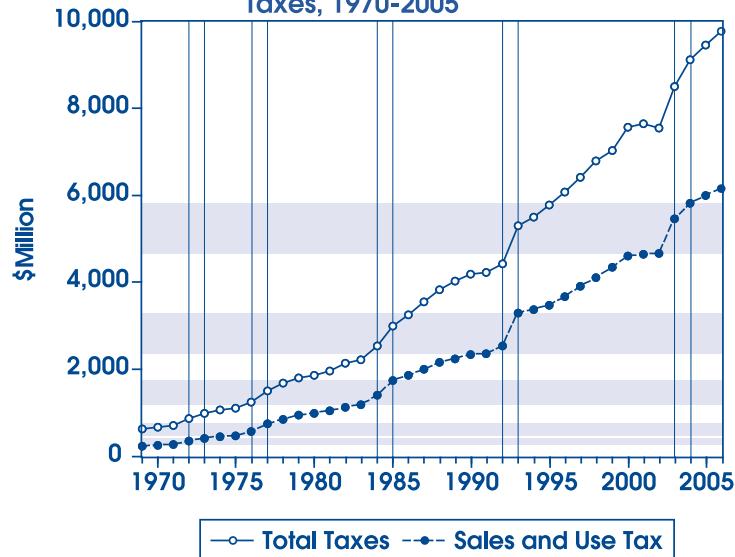
**Table 3. Risk Analysis for Tennessee Tax Collections,
2004-2005**

| Risk That Total Taxes Will Be at or Below Specified Levels | | |
|--|------|---|
| Level of Collections | Risk | |
| \$9,121,027,000 | 0.00 | No Growth |
| 9,212,237,000 | 0.03 | 1.0% Increase |
| 9,303,448,000 | 0.12 | 2.0% Increase |
| 9,365,994,000 | 0.25 | |
| 9,395,500,000 | 0.33 | July 9, 2004 Budget Assumption, 3.0% Increase |
| 9,451,688,000 | 0.50 | Median Forecast |
| 9,485,868,000 | 0.61 | 4.0% Increase |
| 9,537,382,000 | 0.75 | |
| 9,577,078,000 | 0.84 | 5.0% Increase |
| 9,668,289,000 | 0.96 | 6.0% Increase |
| Risk That Sales Taxes Will Be at or Below Specified Levels | | |
| Level of Collections | Risk | |
| \$5,806,503,000 | 0.05 | No Growth |
| 5,864,568,000 | 0.12 | 1.0% Increase |
| 5,922,633,000 | 0.25 | 2.0% Increase |
| 5,980,698,000 | 0.44 | 3.0% Increase |
| 5,998,160,000 | 0.50 | Median Forecast, 3.3% Growth |
| 6,038,763,000 | 0.64 | 4.0% Increase |
| 6,076,038,000 | 0.75 | |
| 6,096,600,000 | 0.80 | July 9, 2004 Budget Assumption, 5.0% Increase |
| 6,154,893,000 | 0.91 | 6.0% Increase |

The 3.3 percent forecasted growth in Sales Taxes follows a pattern that can be seen in Figure 1. After strong growth in the year of a tax rate increase, there is a second strong year, followed by a long sequence of weaker growth. The five years with increases in the sales tax rate in Tennessee account for 24.7 percent of the total 1969-2004 growth, while five “second years” account for 30.1 percent. These 10 years alone account for 54.8 percent of the total, while 25 “between years” contributed little growth.

Fiscal year 2005-2006 is also a “between year,” with a diminished 2.6 percent forecasted growth rate for the Sales and Use Tax. The forecasts reported here have not been adjusted for potential losses from refunds of sales taxes on Internet access charges. In addition, the forecasts make no adjustments for the effect of the Streamlined Sales and Use Tax changes.

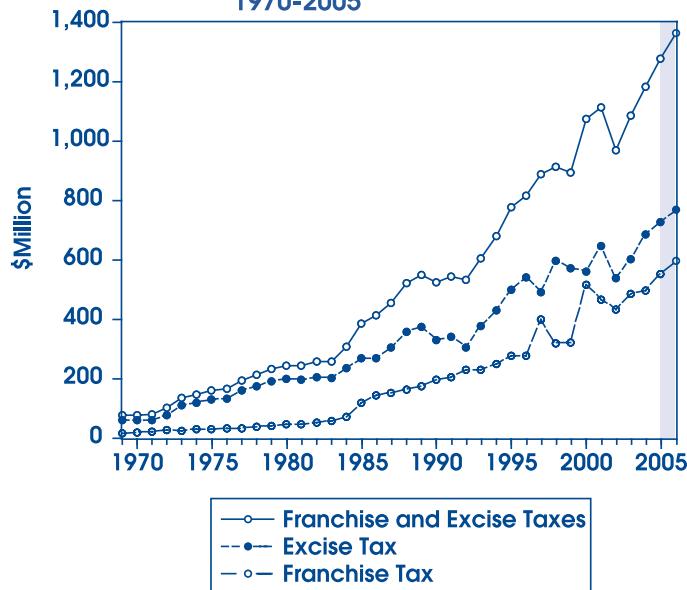
Figure 1. Total Tennessee Taxes and Sales Taxes, 1970-2005



Finally, the forecast presumes that there will be no rollback of the 9.0 percent holdback of sales taxes traditionally shared with municipalities.

The forecast for 8.0 percent growth in 2004-2005 total Franchise and Excise Taxes was generated by forecasting each tax individually, then summing the forecasts. The Franchise Tax, shown in Figure 2, is easier to forecast, having a more reliable time trend and fewer interruptions associated

Figure 2. Franchise and Excise Taxes, 1970-2005



with changes in tax rules. The forecast for 6.7 percent added growth in 2005-2006 makes the assumption that there will be no repeat of the history of volatility about the long-term time trend.

Figure 3 shows the apparent smooth predictability of two of the largest sources of funds, the Gasoline Tax and Motor Vehicle Registrations. That smooth pattern indicates little growth in Gasoline Taxes, but 4.4 percent growth in Motor Vehicle Registrations.

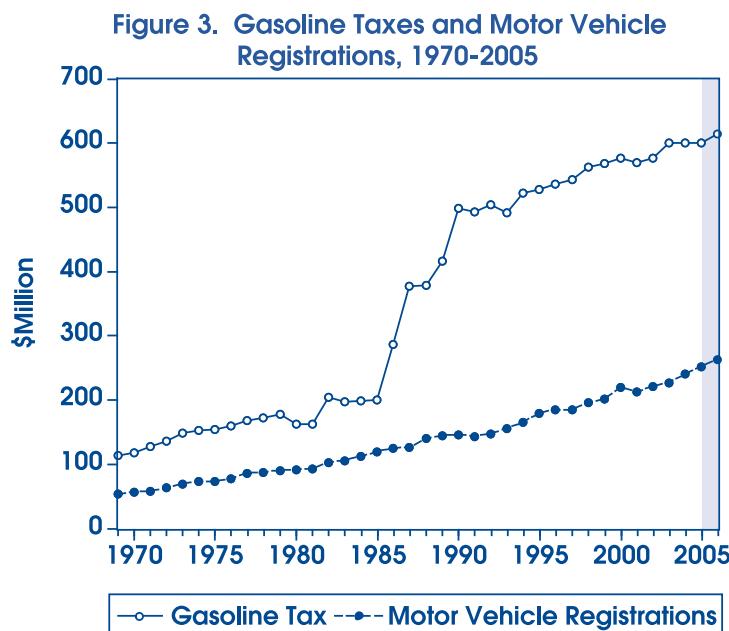


Figure 4 shows that the Inheritance Tax has a great deal of year-to-year volatility, and that the Income Tax is far off its 2000-2001 peak. Fiscal year 2003-2004 Income Tax growth of 19.7 percent may reflect the reallocation to the General Fund of one-third of funds traditionally shared with municipalities. The forecast assumes no reversion to the former pattern of sharing. However, some of the increases in Income Tax revenue in 2003-2004 and the forecast for 2004-2005 come because Tennessee residents have seen increases in Dividend, Interest and Rental Income, as reported by the Department of Commerce's Bureau of Economic Analysis. Trends in that variable generate the forecasted 4.4 percent growth in Income Taxes.

Figure 4. Income Taxes and Inheritance and Estate Taxes, 1970-2005

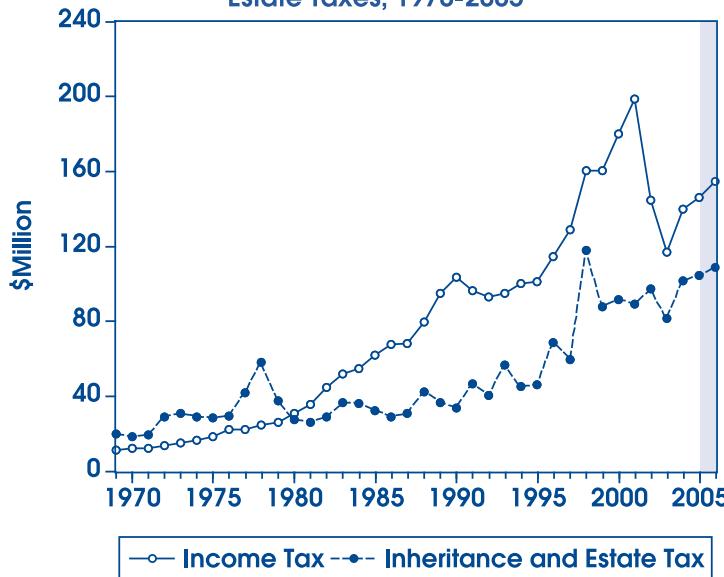
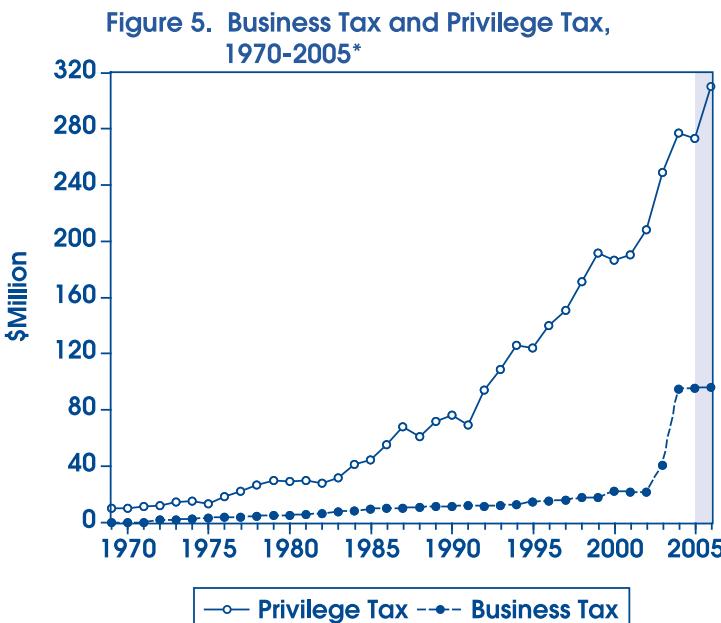


Figure 5 shows that the Business Tax and the Privilege Tax have more than doubled in the last 10 years. The forecasts call for Business Tax collections to grow to \$96 million in 2004-2005, while the Privilege Tax collections grow to \$311 million. Accounting for earmarked portions of the Privilege Tax, the figure is adjusted to \$273 million.



*Forecasted Privilege Tax excludes earmarked funds.